

Loops in python.

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Goal: Learn about loops in python.

We saw the simple loop using the *while* statement in the previous examples. Other looping constructs such as the *for* statement are available to the user. It is important to note that statements within the loop are indented. An example of its usage is:

```
for i in range(3):  
    print "10 raised to ", i, " is ", 10**i
```

Will produce the result:

```
10 raised to 0 is 1  
10 raised to 1 is 10  
10 raised to 2 is 100
```

Note that $a=\text{range}(3)$ is equivalent to $a=[0,1,2]$. Similarly the $\text{range}(1, 6)$ is equivalent to $[1,2,3,4,5]$ and $\text{range}(10, 8, -1)$ is equivalent to $[10, 9]$. To generalize, *range(i, j, k)* produces a list of integers from i to j-1 using a stride k. If i is omitted, it is taken to be zero and k defaults to 1 if omitted. A more efficient (in terms of memory and runtime) is the *xrange()* function used exactly like *range()*.

One can also loop through lists using the for statement so:

```
mylist = ['a', 'b', 3]  
for item in mylist:  
    print item
```

Produces the output:

```
a  
b  
3
```

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